

SEQUENCE LISTING

<110> KIRCHHOFF, LOUIS V
KEIKO, ÔTSU

<120> RECOMBINANT POLYPEPTIDES FOR DIAGNOSING INFECTION WITH
TRYPANOSOMA CRUZI

<130> PNL21311A

<150> US 60/430,654

<151> 2002-04-02

<160> 50

<170> PatentIn version 3.2

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gtt tat tac gga agg act gct ggg ccc atc gta cat caa acc gta cag 144
Val Tyr Tyr Gly Arg Thr Ala Gly Pro Ile Val His Gln Thr Val Gln
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ccg tac aaa tgg cgc tca tga ctt gtt tgt gtc gga cac ggg caa atc 192
Pro Tyr Lys Trp Arg Ser Leu Val Cys Val Gly His Gly Gln Ile
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acg cat cat ttt tgc ccc acc tca gaa aaa aac gtt cat cac agt gtt 240
Thr His His Phe Cys Pro Thr Ser Glu Lys Asn Val His His Ser Val
65 70 75

tat aac agg att cca gcc gga tgt tct tca aat tag cga gaa gag tcg 288
Tyr Asn Arg Ile Pro Ala Gly Cys Ser Ser Asn Arg Glu Glu Ser
80 85 90

ttt gat gtt tgc cat ctg caa ttc cac gaa aat tct tgc gat taa tat 336
Phe Asp Val Cys His Leu Gln Phe His Glu Asn Ser Cys Asp Tyr
95 100 105

gca ggg agc cac aac ccc gaa gga gta ctg gca agt tgg aaa tgc gga 384
Ala Gly Ser His Asn Pro Glu Gly Val Leu Ala Ser Trp Lys Cys Gly
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ctg cat ggg cta tca gag ttc cct cat gct cac gac cga gga gga taa 432
Leu His Gly Leu Ser Glu Phe Pro His Ala His Asp Arg Gly Gly
125 130 135

act cct cta cta cgg cat att aaa tgg aac ccc atc cat cat gtc ttt 480
Thr Pro Leu Leu Arg His Ile Lys Trp Asn Pro Ile His His Val Phe
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acc cgc cac caa aac gaa gac gga agc acc cag aat ttg ccc gga tgt 528
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Val Val Ala Val Ala Thr Trp Ala His Cys Phe Ala Cys Glu Tyr
175 180 185

caa aca tgc att tta cgt tgt tac cgc ctc caa tgt ata cat tgt aca 624
Gln Thr Cys Ile Leu Arg Cys Tyr Arg Leu Gln Cys Ile His Cys Thr
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Trp Leu Val Ser Ser Asp Trp Ile His Gly Pro Ala Pro Thr Gly
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aga aaa taa tat cac taa ttc caa aaa aga aat gac aaa gct acg aga 720
Arg Lys Tyr His Phe Gln Lys Arg Asn Asp Lys Ala Thr Arg
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aaa agt gaa aaa ggc cga gaa aga aaa att gga cgc cat taa ccg ggc 768
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aac caa gct gga aga gga acg aaa cca agc gta caa agc agc aca caa 816
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gtc gga aaa tat taa ctt aaa gaa aag gcc aaa tga cgc agt ttc aaa 912
 Val Gly Lys Tyr Leu Lys Glu Lys Ala Lys Arg Ser Phe Lys
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tgc gga taa gaa aaa aaa ttc tga aac cgc aaa aac tga cga agt aga 960
 Ser Gly Glu Lys Lys Phe Asn Arg Lys Asn Arg Ser Arg
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gaa aca gag ggc ggc tga ggc tgc caa ggc cgt gga gac gga gaa gca 1008
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tgc cga agc gga gaa gca gag ggc agc tga agc cat gaa ggt tgc cga 1248
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Met Phe

-35

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 Val Val Val Val Val Val Val Val Ala Ser Val Ala Leu Pro Ala Gly
 -15 -10 -5

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 Ala Gln Phe Asp Leu Arg Gln Gln Gln Leu Val Ile Gln Asp Phe Phe
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 Asp Ala Ser Thr Leu Leu Leu Cys Asp Gln Gly Gly Gly Gly Ser Ser
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gtg cgt ttg gtg aac aaa tcc ggc att ttc acc ctt gcc ggt agt aaa 1174
 Val Arg Leu Val Asn Lys Ser Gly Ile Phe Thr Leu Ala Gly Ser Lys
 65 70 75

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atg ccc cga gct gtg gtg ctt gag gat gga gcg ctt tac gtg gcg gac 1270
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Ser Ala Asn Asn Leu Val Arg Glu Ile Ser Asn Gly Ile Val Thr Ser
115 120 125

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Phe Ile Thr Glu Gly Leu Leu Gly Pro Ser Tyr Ile Lys Pro Tyr Ser
130 135 140

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145 150 155

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Leu Met Phe Ala Ile Cys Asn Ser Thr Lys Ile Leu Ser Ile Asn Met
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Cys Met Gly Tyr Gln Ser Ser Leu Met Leu Thr Thr Glu Glu Asp Lys
225 230 235

ctc ctc tac tac ggc ata tta aat gga acc cca tcc atc atg tct tta 1702
Leu Leu Tyr Tyr Gly Ile Leu Asn Gly Thr Pro Ser Ile Met Ser Leu
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ccc gcc acc aaa acg aag acg gaa gca ccc aga att tgc ccg gat gtg 1750
Pro Ala Thr Lys Thr Lys Thr Glu Ala Pro Arg Ile Cys Pro Asp Val
260 265 270

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Leu Leu Arg Trp Pro His Gly Pro Ile Val Ser Leu Val Asn Ile Asn
275 280 285

aaa cat gca ttt tac gtt gtt acc gcc tcc aat gta tac att gta cat 1846
Lys His Ala Phe Tyr Val Val Thr Ala Ser Asn Val Tyr Ile Val His
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Asp Gly Ser Tyr His Pro Thr Val Thr Pro Thr Pro Pro Leu Thr Pro
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acg cct aca cca gaa gtg aca ccc aca cct act gtg acc ccg acg cct 1942
Thr Pro Thr Pro Glu Val Thr Pro Thr Pro Thr Val Thr Pro Thr Pro
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aca ccg gaa gtg aca ccg aca ccg cca gtg act ccg agc ccc acc atc 1990
Thr Pro Glu Val Thr Pro Thr Pro Pro Val Thr Pro Ser Pro Thr Ile
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355 360 365

cca atc gaa gac ccg cgg ctt atg cat gaa ctg ctt tct tgg tta atg 2086
Pro Ile Glu Asp Pro Arg Leu Met His Glu Leu Leu Ser Trp Leu Met
370 375 380

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Lys Asp Val Gly Ile Ala Phe Glu Ser Thr Asp Phe Phe Ala Val Phe
385 390 395

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Pro Pro Asp Arg Glu Val Leu Val Pro Gly Tyr Val Asn Val Ser Thr
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Arg Leu Phe Ala Ser Pro Trp Tyr Trp Thr Arg Asn Phe Leu Asp Ser
450 455 460

tta aag aaa aca gta gct tgg aag gac ttg gag gcg ttt tgc atg gtc 2374
Leu Lys Lys Thr Val Ala Trp Lys Asp Leu Glu Ala Phe Cys Met Val
465 470 475

aac tgt gtt gaa cac tgt gag aca atg aca ttc cat aag tca gaa tgt 2422
Asn Cys Val Glu His Cys Glu Thr Met Thr Phe His Lys Ser Glu Cys
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Val Val Ser Ser Val Val Leu Gly Ala Thr Gly Ile Ala Leu Ile Ala
515 520 525

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Pro Pro Met
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Gly Pro Ser Gly Ala Gly Thr Leu Phe Thr Ala Ala Gly Gly Ser Leu
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Gly Lys Asp Ala Ser Thr Leu Leu Leu Cys Asp Gln Gly Gly Gly Gly
50 55 60

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Ser Lys Thr Thr Arg Gly Asn Gln Asn Gly Pro Ala Ala Thr Ala Leu
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Phe Asn Met Pro Arg Ala Val Val Leu Glu Asp Gly Ala Leu Tyr Val
95 100 105

Ala Asp Ser Ala Asn Asn Leu Val Arg Glu Ile Ser Asn Gly Ile Val
110 115 120 125

Thr Ser Phe Ile Thr Glu Gly Leu Leu Gly Pro Ser Tyr Ile Lys Pro
130 135 140

Tyr Ser Arg Pro Asn Gly Ala His Asp Leu Phe Val Ser Asp Thr Gly
145 150 155

Lys Ser Arg Ile Ile Phe Ala Pro Leu Gln Lys Gln Thr Phe Ile Thr
160 165 170

Val Phe Ile Thr Gly Phe Gln Pro Asp Val Leu Gln Ile Ser Glu Lys
175 180 185

Ser Arg Leu Met Phe Ala Ile Cys Asn Ser Thr Lys Ile Leu Ser Ile
190 195 200 205

Asn Met Gln Gly Ala Thr Thr Pro Lys Asp Tyr Trp Gln Val Gly Asn
210 215 220

Ala Asp Cys Met Gly Tyr Gln Ser Ser Leu Met Leu Thr Thr Glu Glu
225 230 235

Asp Lys Leu Leu Tyr Tyr Gly Ile Leu Asn Gly Thr Pro Ser Ile Met
240 245 250

Ser Leu Pro Ala Thr Lys Thr Lys Thr Glu Ala Pro Arg Ile Cys Pro
255 260 265

Asp Val Leu Leu Arg Trp Pro His Gly Pro Ile Val Ser Leu Val Asn
270 275 280 285

Ile Asn Lys His Ala Phe Tyr Val Val Thr Ala Ser Asn Val Tyr Ile
290 295 300

Val His Asp Gly Ser Tyr His Pro Thr Val Thr Pro Thr Pro Pro Leu
305 310 315

Thr Pro Thr Pro Thr Pro Glu Val Thr Pro Thr Pro Thr Val Thr Pro
320 325 330

Thr Pro Thr Pro Glu Val Thr Pro Thr Pro Pro Val Thr Pro Ser Pro
335 340 345

Thr Ile Thr Ile His Arg Gly Phe Ala Val Ala Ala Phe Pro Ala Gln
350 355 360 365

Ser Leu Pro Ile Glu Asp Pro Arg Leu Met His Glu Leu Leu Ser Trp
370 375 380

Leu Met Lys Asp Val Gly Ile Ala Phe Glu Ser Thr Asp Phe Phe Ala
385 390 395

Val Phe Pro Pro Asp Arg Glu Val Leu Val Pro Gly Tyr Val Asn Val
400 405 410

Ser Thr Trp Asn Asn Leu Thr Val Leu Phe Asn Phe Asp Arg Thr Ile
415 420 425

Val Ile Thr Glu Tyr Phe Thr Pro Glu Gly Met Ser Ser Glu Glu Gly
430 435 440 445

Gln Ala Arg Leu Phe Ala Ser Pro Trp Tyr Trp Thr Arg Asn Phe Leu
450 455 460

Asp Ser Leu Lys Lys Thr Val Ala Trp Lys Asp Leu Glu Ala Phe Cys
465 470 475

Met Val Asn Cys Val Glu His Cys Glu Thr Met Thr Phe His Lys Ser
480 485 490

Glu Cys Val Gly Tyr Val Arg Pro Pro Val Cys Asn Asp Val Cys Val
495 500 505

Gly Ala Val Val Ser Ser Val Val Leu Gly Ala Thr Gly Ile Ala Leu
510 515 520 525

Ile Ala Leu Met Val Gly Ser Ser Ala Asn Leu Arg Ser Ala Val Ile
530 535 540

Leu Val Pro Pro Met

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<211> 2151

<212> DNA

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<221> CDS

<222> (1)..(2151)

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1 5 10 15

aat gcc aac aac ctc gtt cga gaa atc tcc aat ggc gtt gtc act tcg 96
Asn Ala Asn Asn Leu Val Arg Glu Ile Ser Asn Gly Val Val Thr Ser
20 25 30

ttt att acg gaa gga ctg ctg ggc cca tcg tac atc aaa ccg tac agc 144
Phe Ile Thr Glu Gly Leu Leu Gly Pro Ser Tyr Ile Lys Pro Tyr Ser
35 40 45

cgt aca aat ggc gct cat gac ttg ttt gtg tcg gac acg ggc aaa tca 192
Arg Thr Asn Gly Ala His Asp Leu Phe Val Ser Asp Thr Gly Lys Ser
50 55 60

cgc atc att ttt gcc cca cct cag aaa aaa acg ttc atc aca gtg ttt 240
Arg Ile Ile Phe Ala Pro Pro Gln Lys Lys Thr Phe Ile Thr Val Phe
65 70 75 80

ata aca gga ttc cag ccg gat gtt ctt caa att agc gag aag agt cgt 288
Ile Thr Gly Phe Gln Pro Asp Val Leu Gln Ile Ser Glu Lys Ser Arg
85 90 95

ttg atg ttt gcc atc tgc aat tcc acg aaa att ctt gcg att aat atg 336
Leu Met Phe Ala Ile Cys Asn Ser Thr Lys Ile Leu Ala Ile Asn Met
100 105 110

cag gga gcc aca acc ccg aag gag tac tgg caa gtt gga aat gcg gac 384
Gln Gly Ala Thr Thr Pro Lys Glu Tyr Trp Gln Val Gly Asn Ala Asp
115 120 125

tgc atg ggc tat cag agt tcc ctc atg ctc acg acc gag gag gat aaa 432
Cys Met Gly Tyr Gln Ser Ser Leu Met Leu Thr Thr Glu Glu Asp Lys
130 135 140

ctc ctc tac tac ggc ata tta aat gga acc cca tcc atc atg tct tta 480
Leu Leu Tyr Tyr Gly Ile Leu Asn Gly Thr Pro Ser Ile Met Ser Leu
145 150 155 160

ccc gcc acc aaa acg aag acg gaa gca ccc aga att tgc ccg gat gtg 528
Pro Ala Thr Lys Thr Lys Thr Glu Ala Pro Arg Ile Cys Pro Asp Val
165 170 175

ttg ttg cag tgg cca cat ggg ccc att gtt tcg ctt gtg aat att aac 576
Leu Leu Gln Trp Pro His Gly Pro Ile Val Ser Leu Val Asn Ile Asn
180 185 190

aaa cat gca ttt tac gtt gtt acc gcc tcc aat gta tac att gta cat 624
Lys His Ala Phe Tyr Val Val Thr Ala Ser Asn Val Tyr Ile Val His
195 200 205

gat ggc tcg tat cat ccg act gga tcc atg gcc cag ctc caa cag gca 672
Asp Gly Ser Tyr His Pro Thr Gly Ser Met Ala Gln Leu Gln Gln Ala
210 215 220

gaa aat aat atc act aat tcc aaa aaa gaa atg aca aag cta cga gaa 720
Glu Asn Asn Ile Thr Asn Ser Lys Lys Glu Met Thr Lys Leu Arg Glu
225 230 235 240

aaa gtg aaa aag gcc gag aaa gaa aaa ttg gac gcc att aac cgg gca 768
Lys Val Lys Lys Ala Glu Lys Glu Lys Leu Asp Ala Ile Asn Arg Ala
245 250 255

acc aag ctg gaa gag gaa cga aac caa gcg tac aaa gca gca cac aag 816
Thr Lys Leu Glu Glu Glu Arg Asn Gln Ala Tyr Lys Ala Ala His Lys
260 265 270

gca gag gag gaa aag gct aaa aca ttt caa cgc ctt ata aca ttt gag 864
Ala Glu Glu Glu Lys Ala Lys Thr Phe Gln Arg Leu Ile Thr Phe Glu
275 280 285

tgc gaa aat att aac tta aag aaa agg cca aat gac gca gtt tca aat 912
Ser Glu Asn Ile Asn Leu Lys Lys Arg Pro Asn Asp Ala Val Ser Asn
290 295 300

cgg gat aag aaa aaa aat tct gaa acc gca aaa act gac gaa gta gag 960
Arg Asp Lys Lys Lys Asn Ser Glu Thr Ala Lys Thr Asp Glu Val Glu
305 310 315 320

aaa cag agg gcg gct gag gct gcc aag gcc gtg gag acg gag aag cag 1008
Lys Gln Arg Ala Ala Glu Ala Ala Lys Ala Val Glu Thr Glu Lys Gln
325 330 335

agg gca gct gag gcc acg aag gtt gcc gaa gcg gag aag cgg aag gca 1056
Arg Ala Ala Glu Ala Thr Lys Val Ala Glu Ala Glu Lys Arg Lys Ala
340 345 350

gct gag gcc gcc aag gcc gtg gag acg gag aag cag agg gca gct gaa 1104
Ala Glu Ala Ala Lys Ala Val Glu Thr Glu Lys Gln Arg Ala Ala Glu
355 360 365

gcc acg aag gtt gcc gaa gcg gag aag cag aag gca gct gag gcc gcc 1152
Ala Thr Lys Val Ala Glu Ala Glu Lys Gln Lys Ala Ala Glu Ala Ala
370 375 380

aag gcc gtg gag acg gag aag cag agg gca gct gaa gcc acg aag gtt 1200
Lys Ala Val Glu Thr Glu Lys Gln Arg Ala Ala Glu Ala Thr Lys Val
385 390 395 400

gcc gaa gcg gag aag cag agg gca gct gaa gcc atg aag gtt gcc gaa 1248
Ala Glu Ala Glu Lys Gln Arg Ala Ala Glu Ala Met Lys Val Ala Glu
405 410 415

gcg gag aag cag aag gca gct gag gcc gcc aag gcc gtg gag acg gag 1296
Ala Glu Lys Gln Lys Ala Ala Glu Ala Ala Lys Ala Val Glu Thr Glu
420 425 430

aag cag agg gca gct gaa gcc acg aag gtt gcc gaa gcg gag aag cag 1344
Lys Gln Arg Ala Ala Glu Ala Thr Lys Val Ala Glu Ala Glu Lys Gln
435 440 445

aag gca gct gag gcc gcc aag gcc gtg gag acg gag aag cag agg gca 1392
Lys Ala Ala Glu Ala Ala Lys Ala Val Glu Thr Glu Lys Gln Arg Ala
450 455 460

gct gaa gcc acg aag gtt gcc gaa gcg gag aag cag aag gca gct gag 1440
Ala Glu Ala Thr Lys Val Ala Glu Ala Glu Lys Gln Lys Ala Ala Glu
465 470 475 480

gcc gcc aag gcc gtg gag acg gag aag cag agg gca gct gaa gcc acg 1488
Ala Ala Lys Ala Val Glu Thr Glu Lys Gln Arg Ala Ala Glu Ala Thr
485 490 495

aag gtt gcc gaa gcg gag aag gat atc gat ccc atg ggt gct tgt ggg 1536
Lys Val Ala Glu Ala Glu Lys Asp Ile Asp Pro Met Gly Ala Cys Gly
500 505 510

tcg aag gac tcg acg agc gac aag ggg ttg gcg agc gat aag gac ggc 1584
Ser Lys Asp Ser Thr Ser Asp Lys Gly Leu Ala Ser Asp Lys Asp Gly
515 520 525

aag aac gcc aag gac cgc aag gaa gcg tgg gag cgc att cgc cag gcg 1632
Lys Asn Ala Lys Asp Arg Lys Glu Ala Trp Glu Arg Ile Arg Gln Ala
530 535 540

att cct cgt gag aag acc gcc gag gca aaa cag cgc cgc atc gag etc 1680
Ile Pro Arg Glu Lys Thr Ala Glu Ala Lys Gln Arg Arg Ile Glu Leu
545 550 555 560

ttc aag aag ttc gac aag aac gag acc ggg aag ctg tgc tac gat gag 1728
Phe Lys Lys Phe Asp Lys Asn Glu Thr Gly Lys Leu Cys Tyr Asp Glu
565 570 575

gtg cac agc ggc tgc ctc gag gtg ctg aag ttg gac gag ttc acg ccg 1776
Val His Ser Gly Cys Leu Glu Val Leu Lys Leu Asp Glu Phe Thr Pro
580 585 590

cga gtg cgc gac atc acg aag cgt gca ttc gac aag gcg agg gcc ctg 1824
Arg Val Arg Asp Ile Thr Lys Arg Ala Phe Asp Lys Ala Arg Ala Leu
595 600 605

ggc agc aag ctg gag aac aag ggc tcc gag gac ttt gtt gaa ttt ctg 1872
Gly Ser Lys Leu Glu Asn Lys Gly Ser Glu Asp Phe Val Glu Phe Leu
610 615 620

gag ttc cgt ctg atg ctg tgc tac atc tac gac ttc ttc gag ctg acg 1920
Glu Phe Arg Leu Met Leu Cys Tyr Ile Tyr Asp Phe Phe Glu Leu Thr
625 630 635 640

gtg atg ttc gac gag att gac gcc tcc ggc aac atg ctg gtt gac gag 1968
Val Met Phe Asp Glu Ile Asp Ala Ser Gly Asn Met Leu Val Asp Glu
645 650 655

gag gag ttc aag cgc gcc gtg ccc aag ctt gag gcg tgg ggc gcc aag 2016
Glu Glu Phe Lys Arg Ala Val Pro Lys Leu Glu Ala Trp Gly Ala Lys
660 665 670

gtc gag gat ccc gcg gcg ctg ttc aag gag ctc gat aag aac ggc act 2064
Val Glu Asp Pro Ala Ala Leu Phe Lys Glu Leu Asp Lys Asn Gly Thr
675 680 685

ggg tcc gtg acg ttc gac gag ttt gct gcg tgg gct tct gca gtc aaa 2112
Gly Ser Val Thr Phe Asp Glu Phe Ala Ala Trp Ala Ser Ala Val Lys
690 695 700

ctg gac gcc gac ggc gac ccg gac aac gtg ccg gat atc 2151
Leu Asp Ala Asp Gly Asp Pro Asp Asn Val Pro Asp Ile
705 710 715

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<211> 717
<212> PRT
<213> T CRUZI

<400> 36

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Asn Ala Asn Asn Leu Val Arg Glu Ile Ser Asn Gly Val Val Thr Ser
20 25 30

Phe Ile Thr Glu Gly Leu Leu Gly Pro Ser Tyr Ile Lys Pro Tyr Ser
35 40 45

Arg Thr Asn Gly Ala His Asp Leu Phe Val Ser Asp Thr Gly Lys Ser
50 55 60

Arg Ile Ile Phe Ala Pro Pro Gln Lys Lys Thr Phe Ile Thr Val Phe
65 70 75 80

Ile Thr Gly Phe Gln Pro Asp Val Leu Gln Ile Ser Glu Lys Ser Arg
 85 90 95

Leu Met Phe Ala Ile Cys Asn Ser Thr Lys Ile Leu Ala Ile Asn Met
 100 105 110

Gln Gly Ala Thr Thr Pro Lys Glu Tyr Trp Gln Val Gly Asn Ala Asp
 115 120 125

Cys Met Gly Tyr Gln Ser Ser Leu Met Leu Thr Thr Glu Glu Asp Lys
 130 135 140

Leu Leu Tyr Tyr Gly Ile Leu Asn Gly Thr Pro Ser Ile Met Ser Leu
145 150 155 160

Pro Ala Thr Lys Thr Lys Thr Glu Ala Pro Arg Ile Cys Pro Asp Val
 165 170 175

Leu Leu Gln Trp Pro His Gly Pro Ile Val Ser Leu Val Asn Ile Asn
 180 185 190

Lys His Ala Phe Tyr Val Val Thr Ala Ser Asn Val Tyr Ile Val His
 195 200 205

Asp Gly Ser Tyr His Pro Thr Gly Ser Met Ala Gln Leu Gln Gln Ala
 210 215 220

Glu Asn Asn Ile Thr Asn Ser Lys Lys Glu Met Thr Lys Leu Arg Glu
225 230 235 240

Lys Val Lys Lys Ala Glu Lys Glu Lys Leu Asp Ala Ile Asn Arg Ala
245 250 255

Thr Lys Leu Glu Glu Glu Arg Asn Gln Ala Tyr Lys Ala Ala His Lys
260 265 270

Ala Glu Glu Glu Lys Ala Lys Thr Phe Gln Arg Leu Ile Thr Phe Glu
275 280 285

Ser Glu Asn Ile Asn Leu Lys Lys Arg Pro Asn Asp Ala Val Ser Asn
290 295 300

Arg Asp Lys Lys Lys Asn Ser Glu Thr Ala Lys Thr Asp Glu Val Glu
305 310 315 320

Lys Gln Arg Ala Ala Glu Ala Ala Lys Ala Val Glu Thr Glu Lys Gln
325 330 335

Arg Ala Ala Glu Ala Thr Lys Val Ala Glu Ala Glu Lys Arg Lys Ala
340 345 350

Ala Glu Ala Ala Lys Ala Val Glu Thr Glu Lys Gln Arg Ala Ala Glu
355 360 365

Ala Thr Lys Val Ala Glu Ala Glu Lys Gln Lys Ala Ala Glu Ala Ala
370 375 380

Lys Ala Val Glu Thr Glu Lys Gln Arg Ala Ala Glu Ala Thr Lys Val
385 390 395 400

Ala Glu Ala Glu Lys Gln Arg Ala Ala Glu Ala Met Lys Val Ala Glu
405 410 415

Ala Glu Lys Gln Lys Ala Ala Glu Ala Ala Lys Ala Val Glu Thr Glu
420 425 430

Lys Gln Arg Ala Ala Glu Ala Thr Lys Val Ala Glu Ala Glu Lys Gln
435 440 445

Lys Ala Ala Glu Ala Ala Lys Ala Val Glu Thr Glu Lys Gln Arg Ala
450 455 460

Ala Glu Ala Thr Lys Val Ala Glu Ala Glu Lys Gln Lys Ala Ala Glu
465 470 475 480

Ala Ala Lys Ala Val Glu Thr Glu Lys Gln Arg Ala Ala Glu Ala Thr
485 490 495

Lys Val Ala Glu Ala Glu Lys Asp Ile Asp Pro Met Gly Ala Cys Gly
500 505 510

Ser Lys Asp Ser Thr Ser Asp Lys Gly Leu Ala Ser Asp Lys Asp Gly
515 520 525

Lys Asn Ala Lys Asp Arg Lys Glu Ala Trp Glu Arg Ile Arg Gln Ala
530 535 540

Ile Pro Arg Glu Lys Thr Ala Glu Ala Lys Gln Arg Arg Ile Glu Leu
545 550 555 560

Phe Lys Lys Phe Asp Lys Asn Glu Thr Gly Lys Leu Cys Tyr Asp Glu
565 570 575

Val His Ser Gly Cys Leu Glu Val Leu Lys Leu Asp Glu Phe Thr Pro
580 585 590

Arg Val Arg Asp Ile Thr Lys Arg Ala Phe Asp Lys Ala Arg Ala Leu
595 600 605

Gly Ser Lys Leu Glu Asn Lys Gly Ser Glu Asp Phe Val Glu Phe Leu
610 615 620

Glu Phe Arg Leu Met Leu Cys Tyr Ile Tyr Asp Phe Phe Glu Leu Thr
625 630 635 640

Val Met Phe Asp Glu Ile Asp Ala Ser Gly Asn Met Leu Val Asp Glu
645 650 655

Glu Glu Phe Lys Arg Ala Val Pro Lys Leu Glu Ala Trp Gly Ala Lys
660 665 670

Val Glu Asp Pro Ala Ala Leu Phe Lys Glu Leu Asp Lys Asn Gly Thr
675 680 685

Gly Ser Val Thr Phe Asp Glu Phe Ala Ala Trp Ala Ser Ala Val Lys
690 695 700

Leu Asp Ala Asp Gly Asp Pro Asp Asn Val Pro Asp Ile
705 710 715

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<213> T CRUZI

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Ala Lys Glu Ile Ala Ala Leu Glu Glu Ser Met Asn Ala Arg Ala Gln
20 25 30

gag ctg gca cgc gag aag aag ctt gct gac cgc gcg ttc ctc gac cag 144
Glu Leu Ala Arg Glu Lys Lys Leu Ala Asp Arg Ala Phe Leu Asp Gln
35 40 45

aag ccg gag ggc gtg ccg ctg cga gag ctg ccg ctc gac gac gac agc 192
Lys Pro Glu Gly Val Pro Leu Arg Glu Leu Pro Leu Asp Asp Asp Ser
50 55 60

gac ttt gtt gct atg gag cag gag cgc agg cag ctg ctc gag aag gac 240
Asp Phe Val Ala Met Glu Gln Glu Arg Arg Gln Leu Leu Glu Lys Asp
65 70 75 80

ccg cgc agg aac gcg aag gag atc gct gcg ctt gag gag agc atg aat 288
Pro Arg Arg Asn Ala Lys Glu Ile Ala Ala Leu Glu Glu Ser Met Asn
85 90 95

gcc cgc gca cag gag ctg gca cgc gag aag aag ctt gct gac cgc gcg 336
Ala Arg Ala Gln Glu Leu Ala Arg Glu Lys Lys Leu Ala Asp Arg Ala
100 105 110

ttc ctc gac cag aag ccg gag ggc gtg ccg ctg cga gag ctg ccg ctc 384
Phe Leu Asp Gln Lys Pro Glu Gly Val Pro Leu Arg Glu Leu Pro Leu
115 120 125

gac gac gac agc gac ttt gtt gct atg gag cag gag cgc agg cag ctg 432
Asp Asp Asp Ser Asp Phe Val Ala Met Glu Gln Glu Arg Arg Gln Leu
130 135 140

ctc gag aag gac ccg cgc agg aac gcg aag gag atc gct gcg ctt gag 480
Leu Glu Lys Asp Pro Arg Arg Asn Ala Lys Glu Ile Ala Ala Leu Glu
145 150 155 160

gag agc atg aat gcc cgc gca cag gag ctg gca cgc gag aag aag ctt 528
Glu Ser Met Asn Ala Arg Ala Gln Glu Leu Ala Arg Glu Lys Lys Leu
165 170 175

gct gac cgc gcg ttc ctc gac cag aag ccg gag ggc gtg ccg ctg cga 576
Ala Asp Arg Ala Phe Leu Asp Gln Lys Pro Glu Gly Val Pro Leu Arg
180 185 190

gag ctg ccg ctc gac gac gac agc gac ttt gtt gct atg gag cag gag 624
Glu Leu Pro Leu Asp Asp Asp Ser Asp Phe Val Ala Met Glu Gln Glu
195 200 205

cgc agg cag ctg ctc gag aag gac ccg cgc agg aac gcg aag gag atc 672
Arg Arg Gln Leu Leu Glu Lys Asp Pro Arg Arg Asn Ala Lys Glu Ile
210 215 220

gct gcg ctt gag gag agc atg aat gcc cgc gca cag gag ctg gca cgc 720
Ala Ala Leu Glu Glu Ser Met Asn Ala Arg Ala Gln Glu Leu Ala Arg
225 230 235 240

gag aag aag ctt gct gac cgc gcg ttc ctc gac cag aag ccg gag ggc 768
Glu Lys Lys Leu Ala Asp Arg Ala Phe Leu Asp Gln Lys Pro Glu Gly
245 250 255

gtg ccg ctg cga gag ctg ccg ctc gac gac gac agc gac ttt gtt gct 816
Val Pro Leu Arg Glu Leu Pro Leu Asp Asp Asp Ser Asp Phe Val Ala
260 265 270

atg gag cag gag cgc agg cag ctg ctc gag aag gac ccg cgc agg aac 864
Met Glu Gln Glu Arg Arg Gln Leu Leu Glu Lys Asp Pro Arg Arg Asn
275 280 285

gcg aag gag atc gct gcg ctt gag gag agc atg aat gcc cgc gca cag 912
Ala Lys Glu Ile Ala Ala Leu Glu Glu Ser Met Asn Ala Arg Ala Gln
290 295 300

gag ctg gca cgc gag aag aag ctt gct gac cgc gcg ttc ctc gac cag 960
Glu Leu Ala Arg Glu Lys Lys Leu Ala Asp Arg Ala Phe Leu Asp Gln
305 310 315 320

aag ccg gag ggc gtg ccg ctg cga gag ctg ccg ctc gac gac gac agc 1008
Lys Pro Glu Gly Val Pro Leu Arg Glu Leu Pro Leu Asp Asp Asp Ser
325 330 335

gac ttt gtt gct atg gag cag gag cgc agg cag ctg ctc gag aag gac 1056
Asp Phe Val Ala Met Glu Gln Glu Arg Arg Gln Leu Leu Glu Lys Asp
340 345 350

ccg cgc agg aac gcg aag gag atc gct gcg ctt gag gag agc atg aat 1104
Pro Arg Arg Asn Ala Lys Glu Ile Ala Ala Leu Glu Glu Ser Met Asn
355 360 365

gcc cgc gca cag gag ctg gca cgc gag aag aag ctt gct gac cgc gcg 1152
Ala Arg Ala Gln Glu Leu Ala Arg Glu Lys Lys Leu Ala Asp Arg Ala
370 375 380

ttc ctc gac cag aag ccg gag ggc gtg ccg ctg cga gag ctg ccg ctc 1200
Phe Leu Asp Gln Lys Pro Glu Gly Val Pro Leu Arg Glu Leu Pro Leu
385 390 395 400

gac gac gac agc gac ttt gtt gct atg gag cag gag cgc agg cag ctg 1248
Asp Asp Asp Ser Asp Phe Val Ala Met Glu Gln Glu Arg Arg Gln Leu
405 410 415

ctc gag aag gac ccg cgc agg aac gcg aag gag atc gct gcg ctt gag 1296
Leu Glu Lys Asp Pro Arg Arg Asn Ala Lys Glu Ile Ala Ala Leu Glu
420 425 430

gag agc atg aat gcc cgc gca cag gag ctg gca cgc gag aag aag ctt 1344
Glu Ser Met Asn Ala Arg Ala Gln Glu Leu Ala Arg Glu Lys Lys Leu
435 440 445

gct gac cgc gcg ttc ctc gac cag aag ccg gag ggc gtg ccg ctg cga 1392
Ala Asp Arg Ala Phe Leu Asp Gln Lys Pro Glu Gly Val Pro Leu Arg
450 455 460

gag ctg ccg ctc gac gac gac agc gac ttt gtt gct atg gag cag gag 1440
Glu Leu Pro Leu Asp Asp Asp Ser Asp Phe Val Ala Met Glu Gln Glu
465 470 475 480

cgc agg cag ctg ctc gag aag gac ccg cgc agg aac gcg aag gag atc 1488
Arg Arg Gln Leu Leu Glu Lys Asp Pro Arg Arg Asn Ala Lys Glu Ile
485 490 495

gct gcg ctt gag gag agc atg aat gcc cgc gca cag gag ctg gca cgc 1536
Ala Ala Leu Glu Glu Ser Met Asn Ala Arg Ala Gln Glu Leu Ala Arg
500 505 510

gag aag aag ctt gct gac cgc gcg ttc ctc gac cag aag ccg gag ggc 1584
Glu Lys Lys Leu Ala Asp Arg Ala Phe Leu Asp Gln Lys Pro Glu Gly
515 520 525

gtg ccg ctg cga gag ctg ccg ctc gac gac gac agc gac ttt gtt gct 1632
Val Pro Leu Arg Glu Leu Pro Leu Asp Asp Asp Ser Asp Phe Val Ala
530 535 540

atg gag cag gag cgc agg cag ctg ctc gag aag gac ccg cgc agg aac 1680
Met Glu Gln Glu Arg Arg Gln Leu Leu Glu Lys Asp Pro Arg Arg Asn
545 550 555 560

gcg aag gag atc gct gcg ctt gag gag agc atg aat gcc cgc gca cag 1728
Ala Lys Glu Ile Ala Ala Leu Glu Glu Ser Met Asn Ala Arg Ala Gln
565 570 575

gag ctg gca cgc gag aag aag ctt gct gac cgc gcg ttc ctc gac cag 1776
Glu Leu Ala Arg Glu Lys Lys Leu Ala Asp Arg Ala Phe Leu Asp Gln
580 585 590

aag ccg gag ggc gtg ccg ctg cga gag ctg ccg ctc gac gac gac agc 1824
Lys Pro Glu Gly Val Pro Leu Arg Glu Leu Pro Leu Asp Asp Asp Ser
595 600 605

gac ttt gtt gct 1836
Asp Phe Val Ala
610

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<212> PRT
<213> T CRUZI

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Ala Lys Glu Ile Ala Ala Leu Glu Glu Ser Met Asn Ala Arg Ala Gln
20 25 30

Glu Leu Ala Arg Glu Lys Lys Leu Ala Asp Arg Ala Phe Leu Asp Gln
35 40 45

Lys Pro Glu Gly Val Pro Leu Arg Glu Leu Pro Leu Asp Asp Asp Ser
50 55 60

Asp Phe Val Ala Met Glu Gln Glu Arg Arg Gln Leu Leu Glu Lys Asp
65 70 75 80

Pro Arg Arg Asn Ala Lys Glu Ile Ala Ala Leu Glu Glu Ser Met Asn
85 90 95

Ala Arg Ala Gln Glu Leu Ala Arg Glu Lys Lys Leu Ala Asp Arg Ala
100 105 110

Phe Leu Asp Gln Lys Pro Glu Gly Val Pro Leu Arg Glu Leu Pro Leu
115 120 125

Asp Asp Asp Ser Asp Phe Val Ala Met Glu Gln Glu Arg Arg Gln Leu
130 135 140

Leu Glu Lys Asp Pro Arg Arg Asn Ala Lys Glu Ile Ala Ala Leu Glu
145 150 155 160

Glu Ser Met Asn Ala Arg Ala Gln Glu Leu Ala Arg Glu Lys Lys Leu
165 170 175

Ala Asp Arg Ala Phe Leu Asp Gln Lys Pro Glu Gly Val Pro Leu Arg
180 185 190

Glu Leu Pro Leu Asp Asp Asp Ser Asp Phe Val Ala Met Glu Gln Glu
195 200 205

Arg Arg Gln Leu Leu Glu Lys Asp Pro Arg Arg Asn Ala Lys Glu Ile
210 215 220

Ala Ala Leu Glu Glu Ser Met Asn Ala Arg Ala Gln Glu Leu Ala Arg
225 230 235 240

Glu Lys Lys Leu Ala Asp Arg Ala Phe Leu Asp Gln Lys Pro Glu Gly
245 250 255

Val Pro Leu Arg Glu Leu Pro Leu Asp Asp Asp Ser Asp Phe Val Ala
260 265 270

Met Glu Gln Glu Arg Arg Gln Leu Leu Glu Lys Asp Pro Arg Arg Asn
275 280 285

Ala Lys Glu Ile Ala Ala Leu Glu Glu Ser Met Asn Ala Arg Ala Gln
290 295 300

Glu Leu Ala Arg Glu Lys Lys Leu Ala Asp Arg Ala Phe Leu Asp Gln
305 310 315 320

Lys Pro Glu Gly Val Pro Leu Arg Glu Leu Pro Leu Asp Asp Asp Ser
325 330 335

Asp Phe Val Ala Met Glu Gln Glu Arg Arg Gln Leu Leu Glu Lys Asp
340 345 350

Pro Arg Arg Asn Ala Lys Glu Ile Ala Ala Leu Glu Glu Ser Met Asn
355 360 365

Ala Arg Ala Gln Glu Leu Ala Arg Glu Lys Lys Leu Ala Asp Arg Ala
370 375 380

Phe Leu Asp Gln Lys Pro Glu Gly Val Pro Leu Arg Glu Leu Pro Leu
385 390 395 400

Asp Asp Asp Ser Asp Phe Val Ala Met Glu Gln Glu Arg Arg Gln Leu
405 410 415

Leu Glu Lys Asp Pro Arg Arg Asn Ala Lys Glu Ile Ala Ala Leu Glu
420 425 430

Glu Ser Met Asn Ala Arg Ala Gln Glu Leu Ala Arg Glu Lys Lys Leu
435 440 445

Ala Asp Arg Ala Phe Leu Asp Gln Lys Pro Glu Gly Val Pro Leu Arg
450 455 460

Glu Leu Pro Leu Asp Asp Asp Ser Asp Phe Val Ala Met Glu Gln Glu
465 470 475 480

Arg Arg Gln Leu Leu Glu Lys Asp Pro Arg Arg Asn Ala Lys Glu Ile
485 490 495

Ala Ala Leu Glu Glu Ser Met Asn Ala Arg Ala Gln Glu Leu Ala Arg
500 505 510

Glu Lys Lys Leu Ala Asp Arg Ala Phe Leu Asp Gln Lys Pro Glu Gly
515 520 525

Val Pro Leu Arg Glu Leu Pro Leu Asp Asp Asp Ser Asp Phe Val Ala
530 535 540

Met Glu Gln Glu Arg Arg Gln Leu Leu Glu Lys Asp Pro Arg Arg Asn
545 550 555 560

Ala Lys Glu Ile Ala Ala Leu Glu Glu Ser Met Asn Ala Arg Ala Gln
565 570 575

Glu Leu Ala Arg Glu Lys Lys Leu Ala Asp Arg Ala Phe Leu Asp Gln
580 585 590

Lys Pro Glu Gly Val Pro Leu Arg Glu Leu Pro Leu Asp Asp Asp Ser
595 600 605

Asp Phe Val Ala
610

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<211> 621
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<213> T CRUZI

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Phe Asn Pro Ser Thr Asp Lys Leu Lys Leu Asn Gln Gln Asn Lys Pro
1 5 10 15

cat att gca aat aat aaa caa aaa aca aca ctc gaa aaa act caa aca 96
His Ile Ala Asn Asn Lys Gln Lys Thr Thr Leu Glu Lys Thr Gln Thr
20 25 30

gaa caa aaa aca gcg cca ttt gga cag ggc gca gca ggg tgg aca aaa 144
Glu Gln Lys Thr Ala Pro Phe Gly Gln Gly Ala Ala Gly Trp Thr Lys
35 40 45

cca tca cca ttt gga cag gcc gca gca ggt gac aaa cca cca cca ttt 192
Pro Ser Pro Phe Gly Gln Ala Ala Ala Gly Asp Lys Pro Pro Pro Phe
50 55 60

gga cag gcc gca gca ggt gac aaa cca cca cca ttt gga cag gcc gca 240
Gly Gln Ala Ala Ala Gly Asp Lys Pro Pro Pro Phe Gly Gln Ala Ala
65 70 75 80

gca ggt gac aaa cca tca cta ttt gga cag gcc gca gca ggt gac aaa 288
Ala Gly Asp Lys Pro Ser Leu Phe Gly Gln Ala Ala Ala Gly Asp Lys
85 90 95

cca tca cca ttt gga cag gcc gca gca ggt gac aaa cca cca cca ttt 336
Pro Ser Pro Phe Gly Gln Ala Ala Ala Gly Asp Lys Pro Pro Pro Phe
100 105 110

gga cag gcc gca gca ggt gac aaa cca tca cta ttt gga cag gcc gca 384
Gly Gln Ala Ala Ala Gly Asp Lys Pro Ser Leu Phe Gly Gln Ala Ala
115 120 125

gca ggt gac aaa cca tca cca ttt gga cag gcc gca gca ggt gac aaa 432
Ala Gly Asp Lys Pro Ser Pro Phe Gly Gln Ala Ala Ala Gly Asp Lys
130 135 140

cca cca cca ttt gga cag gcc gca gca ggt gac aaa cca cca cca ttt 480
Pro Pro Pro Phe Gly Gln Ala Ala Ala Gly Asp Lys Pro Pro Pro Phe
145 150 155 160

gga cag gcc gca gca ggt gac aaa cca tca cta ttt gga cag gcc gca 528
Gly Gln Ala Ala Ala Gly Asp Lys Pro Ser Leu Phe Gly Gln Ala Ala
165 170 175

gca ggt gac aaa cca tca cca ttt gga cag gga act gcg ttt gat gcc 576
Ala Gly Asp Lys Pro Ser Pro Phe Gly Gln Gly Thr Ala Phe Asp Ala
180 185 190

tct cga agc act gtg ttt gcg aat gcg cct ggt gtt gcc cag gtg 621
Ser Arg Ser Thr Val Phe Ala Asn Ala Pro Gly Val Ala Gln Val
195 200 205

<210> 40
<211> 207
<212> PRT
<213> T CRUZI

<400> 40

Phe Asn Pro Ser Thr Asp Lys Leu Lys Leu Asn Gln Gln Asn Lys Pro
1 5 10 15

His Ile Ala Asn Asn Lys Gln Lys Thr Thr Leu Glu Lys Thr Gln Thr
20 25 30

Glu Gln Lys Thr Ala Pro Phe Gly Gln Gly Ala Ala Gly Trp Thr Lys
35 40 45

Pro Ser Pro Phe Gly Gln Ala Ala Ala Gly Asp Lys Pro Pro Pro Phe
50 55 60

Gly Gln Ala Ala Ala Gly Asp Lys Pro Pro Pro Phe Gly Gln Ala Ala
65 70 75 80

Ala Gly Asp Lys Pro Ser Leu Phe Gly Gln Ala Ala Ala Gly Asp Lys
85 90 95

Pro Ser Pro Phe Gly Gln Ala Ala Ala Gly Asp Lys Pro Pro Pro Phe
100 105 110

Gly Gln Ala Ala Ala Gly Asp Lys Pro Ser Leu Phe Gly Gln Ala Ala
115 120 125

Ala Gly Asp Lys Pro Ser Pro Phe Gly Gln Ala Ala Ala Gly Asp Lys
130 135 140

Pro Pro Pro Phe Gly Gln Ala Ala Ala Gly Asp Lys Pro Pro Pro Phe
145 150 155 160

Gly Gln Ala Ala Ala Gly Asp Lys Pro Ser Leu Phe Gly Gln Ala Ala
165 170 175

Ala Gly Asp Lys Pro Ser Pro Phe Gly Gln Gly Thr Ala Phe Asp Ala
180 185 190

Ser Arg Ser Thr Val Phe Ala Asn Ala Pro Gly Val Ala Gln Val
195 200 205

<210> 41
<211> 1845
<212> DNA
<213> T CRUZI

<220>
<221> CDS
<222> (1)..(1845)

<400> 41
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Phe Asn Pro Ser Thr Asp Lys Leu Lys Leu Asn Gln Gln Asn Lys Pro
1 5 10 15

cat att gca aat aat aaa caa aaa aca aca.ctc gaa aaa act caa aca 96
His Ile Ala Asn Asn Lys Gln Lys Thr Thr Leu Glu Lys Thr Gln Thr
20 25 30

gaa caa aaa aca gcg cca ttt gga cag ggc gca gca ggg tgg aca aaa 144
Glu Gln Lys Thr Ala Pro Phe Gly Gln Gly Ala Ala Gly Trp Thr Lys
35 40 45

cca tca cca ttt gga cag gcc gca gca ggt gac aaa cca cca cca ttt 192
 Pro Ser Pro Phe Gly Gln Ala Ala Gly Asp Lys Pro Pro Pro Phe
 50 55 60

gga cag gcc gca gca ggt gac aaa cca cca cca ttt gga cag gcc gca 240
 Gly Gln Ala Ala Ala Gly Asp Lys Pro Pro Pro Phe Gly Gln Ala Ala
 65 70 75 80

gca ggt gac aaa cca tca cta ttt gga cag gcc gca gca ggt gac aaa 288
 Ala Gly Asp Lys Pro Ser Leu Phe Gly Gln Ala Ala Ala Gly Asp Lys
 85 90 95

cca tca cca ttt gga cag gcc gca gca ggt gac aaa cca cca cca ttt 336
 Pro Ser Pro Phe Gly Gln Ala Ala Ala Gly Asp Lys Pro Pro Pro Phe
 100 105 110

gga cag gcc gca gca ggt gac aaa cca tca cta ttt gga cag gcc gca 384
 Gly Gln Ala Ala Ala Gly Asp Lys Pro Ser Leu Phe Gly Gln Ala Ala
 115 120 125

gca ggt gac aaa cca tca cca ttt gga cag gcc gca gca ggt gac aaa 432
 Ala Gly Asp Lys Pro Ser Pro Phe Gly Gln Ala Ala Ala Gly Asp Lys
 130 135 140

cca cca cca ttt gga cag gcc gca gca ggt gac aaa cca cca cca ttt 480
 Pro Pro Pro Phe Gly Gln Ala Ala Ala Gly Asp Lys Pro Pro Pro Phe
 145 150 155 160

gga cag gcc gca gca ggt gac aaa cca tca cta ttt gga cag gcc gca 528
 Gly Gln Ala Ala Ala Gly Asp Lys Pro Ser Leu Phe Gly Gln Ala Ala
 165 170 175

gca ggt gac aaa cca tca cca ttt gga cag gga act gcg ttt gat gcc 576
 Ala Gly Asp Lys Pro Ser Pro Phe Gly Gln Gly Thr Ala Phe Asp Ala
 180 185 190

tct cga agc act gtg ttt gcg aat gcg cct ggt gtt gcc cag gtg atg 624
 Ser Arg Ser Thr Val Phe Ala Asn Ala Pro Gly Val Ala Gln Val Met
 195 200 205

gag cag gag cgc agg cag ctg ctc gag aag gac ccg cgc agg aac gcg 672
 Glu Gln Glu Arg Arg Gln Leu Leu Glu Lys Asp Pro Arg Arg Asn Ala
 210 215 220

aag gag atc gct gcg ctt gag gag agc atg aat gcc cgc gca cag gag 720

Lys Glu Ile Ala Ala Leu Glu Glu Ser Met Asn Ala Arg Ala Gln Glu
225 230 235 240

ctg gca cgc gag aag aag ctt gct gac cgc gcg ttc ctc gac cag aag 768
Leu Ala Arg Glu Lys Lys Leu Ala Asp Arg Ala Phe Leu Asp Gln Lys
 245 250 255

ccg gag ggc gtg ccg ctg cga gag ctg ccg ctc gac gac gac agc gac 816
Pro Glu Gly Val Pro Leu Arg Glu Leu Pro Leu Asp Asp Asp Ser Asp
 260 265 270

ttt gtt gct atg gag cag gag cgc agg cag ctg ctc gag aag gac ccg 864
Phe Val Ala Met Glu Gln Glu Arg Arg Gln Leu Leu Glu Lys Asp Pro
 275 280 285

cgc agg aac gcg aag gag atc gct gcg ctt gag gag agc atg aat gcc 912
Arg Arg Asn Ala Lys Glu Ile Ala Ala Leu Glu Glu Ser Met Asn Ala
 290 295 300

cgc gca cag gag ctg gca cgc gag aag aag ctt gct gac cgc gcg ttc 960
Arg Ala Gln Glu Leu Ala Arg Glu Lys Lys Leu Ala Asp Arg Ala Phe
305 310 315 320

ctc gac cag aag ccg gag ggc gtg ccg ctg cga gag ctg ccg ctc gac 1008
Leu Asp Gln Lys Pro Glu Gly Val Pro Leu Arg Glu Leu Pro Leu Asp
 325 330 335

gac gac agc gac ttt gtt gct atg gag cag gag cgc agg cag ctg ctc 1056
Asp Asp Ser Asp Phe Val Ala Met Glu Gln Glu Arg Arg Gln Leu Leu
 340 345 350

gag aag gac ccg cgc agg aac gcg aag gag atc gct gcg ctt gag gag 1104
Glu Lys Asp Pro Arg Arg Asn Ala Lys Glu Ile Ala Ala Leu Glu Glu
 355 360 365

agc atg aat gcc cgc gca cag gag ctg gca cgc gag aag aag ctt gct 1152
Ser Met Asn Ala Arg Ala Gln Glu Leu Ala Arg Glu Lys Lys Leu Ala
 370 375 380

gac cgc gcg ttc ctc gac cag aag ccg gag ggc gtg ccg ctg cga gag 1200
Asp Arg Ala Phe Leu Asp Gln Lys Pro Glu Gly Val Pro Leu Arg Glu
385 390 395 400

ctg ccg ctc gac gac gac agc gac ttt gtt gct atg gag cag gag cgc 1248
Leu Pro Leu Asp Asp Asp Ser Asp Phe Val Ala Met Glu Gln Glu Arg
405 410 415

agg cag ctg ctc gag aag gac ccg cgc agg aac gcg aag gag atc gct 1296
Arg Gln Leu Leu Glu Lys Asp Pro Arg Arg Asn Ala Lys Glu Ile Ala
420 425 430

gcg ctt gag gag agc atg aat gcc cgc gca cag gag ctg gca cgc gag 1344
Ala Leu Glu Glu Ser Met Asn Ala Arg Ala Gln Glu Leu Ala Arg Glu
435 440 445

aag aag ctt gct gac cgc gcg ttc ctc gac cag aag ccg gag ggc gtg 1392
Lys Lys Leu Ala Asp Arg Ala Phe Leu Asp Gln Lys Pro Glu Gly Val
450 455 460

ccg ctg cga gag ctg ccg ctc gac gac gac agc gac ttt gtt gct atg 1440
Pro Leu Arg Glu Leu Pro Leu Asp Asp Asp Ser Asp Phe Val Ala Met
465 470 475 480

gag cag gag cgc agg cag ctg ctc gag aag gac ccg cgc agg aac gcg 1488
Glu Gln Glu Arg Arg Gln Leu Leu Glu Lys Asp Pro Arg Arg Asn Ala
485 490 495

aag gag atc gct gcg ctt gag gag agc atg aat gcc cgc gca cag gag 1536
Lys Glu Ile Ala Ala Leu Glu Glu Ser Met Asn Ala Arg Ala Gln Glu
500 505 510

ctg gca cgc gag aag aag ctt gct gac cgc gcg ttc ctc gac cag aag 1584
Leu Ala Arg Glu Lys Lys Leu Ala Asp Arg Ala Phe Leu Asp Gln Lys
515 520 525

ccg gag ggc gtg ccg ctg cga gag ctg ccg ctc gac gac gac agc gac 1632
Pro Glu Gly Val Pro Leu Arg Glu Leu Pro Leu Asp Asp Asp Ser Asp
530 535 540

ttt gtt gct atg gag cag gag cgc agg cag ctg ctc gag aag gac ccg 1680
Phe Val Ala Met Glu Gln Glu Arg Arg Gln Leu Leu Glu Lys Asp Pro
545 550 555 560

cgc agg aac gcg aag gag atc gct gcg ctt gag gag agc atg aat gcc 1728
Arg Arg Asn Ala Lys Glu Ile Ala Ala Leu Glu Glu Ser Met Asn Ala
565 570 575

cgc gca cag gag ctg gca cgc gag aag aag ctt gct gac cgc gcg ttc 1776
Arg Ala Gln Glu Leu Ala Arg Glu Lys Lys Leu Ala Asp Arg Ala Phe
580 585 590

ctc gac cag aag ccg gag ggc gtg ccg ctg cga gag ctg ccg ctc gac 1824
Leu Asp Gln Lys Pro Glu Gly Val Pro Leu Arg Glu Leu Pro Leu Asp
595 600 605

gac gac agc gac ttt gtt gct 1845
Asp Asp Ser Asp Phe Val Ala
610 615

<210> 42
<211> 615
<212> PRT
<213> T CRUZI

<400> 42

Phe Asn Pro Ser Thr Asp Lys Leu Lys Leu Asn Gln Gln Asn Lys Pro
1 5 10 15

His Ile Ala Asn Asn Lys Gln Lys Thr Thr Leu Glu Lys Thr Gln Thr
20 25 30

Glu Gln Lys Thr Ala Pro Phe Gly Gln Gly Ala Ala Gly Trp Thr Lys
35 40 45

Pro Ser Pro Phe Gly Gln Ala Ala Ala Gly Asp Lys Pro Pro Pro Phe
50 55 60

Gly Gln Ala Ala Ala Gly Asp Lys Pro Pro Pro Phe Gly Gln Ala Ala
65 70 75 80

Ala Gly Asp Lys Pro Ser Leu Phe Gly Gln Ala Ala Ala Gly Asp Lys
85 90 95

Pro Ser Pro Phe Gly Gln Ala Ala Ala Gly Asp Lys Pro Pro Pro Phe
100 105 110

Gly Gln Ala Ala Ala Gly Asp Lys Pro Ser Leu Phe Gly Gln Ala Ala
115 120 125

Ala Gly Asp Lys Pro Ser Pro Phe Gly Gln Ala Ala Ala Gly Asp Lys
130 135 140

Pro Pro Pro Phe Gly Gln Ala Ala Ala Gly Asp Lys Pro Pro Pro Phe
145 150 155 160

Gly Gln Ala Ala Ala Gly Asp Lys Pro Ser Leu Phe Gly Gln Ala Ala
165 170 175

Ala Gly Asp Lys Pro Ser Pro Phe Gly Gln Gly Thr Ala Phe Asp Ala
180 185 190

Ser Arg Ser Thr Val Phe Ala Asn Ala Pro Gly Val Ala Gln Val Met
195 200 205

Glu Gln Glu Arg Arg Gln Leu Leu Glu Lys Asp Pro Arg Arg Asn Ala
210 215 220

Lys Glu Ile Ala Ala Leu Glu Glu Ser Met Asn Ala Arg Ala Gln Glu
225 230 235 240

Leu Ala Arg Glu Lys Lys Leu Ala Asp Arg Ala Phe Leu Asp Gln Lys
245 250 255

Pro Glu Gly Val Pro Leu Arg Glu Leu Pro Leu Asp Asp Asp Ser Asp
260 265 270

Phe Val Ala Met Glu Gln Glu Arg Arg Gln Leu Leu Glu Lys Asp Pro
275 280 285

Arg Arg Asn Ala Lys Glu Ile Ala Ala Leu Glu Glu Ser Met Asn Ala
290 295 300

Arg Ala Gln Glu Leu Ala Arg Glu Lys Lys Leu Ala Asp Arg Ala Phe
305 310 315 320

Leu Asp Gln Lys Pro Glu Gly Val Pro Leu Arg Glu Leu Pro Leu Asp
325 330 335

Asp Asp Ser Asp Phe Val Ala Met Glu Gln Glu Arg Arg Gln Leu Leu
340 345 350

Glu Lys Asp Pro Arg Arg Asn Ala Lys Glu Ile Ala Ala Leu Glu Glu
355 360 365

Ser Met Asn Ala Arg Ala Gln Glu Leu Ala Arg Glu Lys Lys Leu Ala
370 375 380

Asp Arg Ala Phe Leu Asp Gln Lys Pro Glu Gly Val Pro Leu Arg Glu
385 390 395 400

Leu Pro Leu Asp Asp Asp Ser Asp Phe Val Ala Met Glu Gln Glu Arg
405 410 415

Arg Gln Leu Leu Glu Lys Asp Pro Arg Arg Asn Ala Lys Glu Ile Ala
420 425 430

Ala Leu Glu Glu Ser Met Asn Ala Arg Ala Gln Glu Leu Ala Arg Glu
435 440 445

Lys Lys Leu Ala Asp Arg Ala Phe Leu Asp Gln Lys Pro Glu Gly Val
450 455 460

Pro Leu Arg Glu Leu Pro Leu Asp Asp Asp Ser Asp Phe Val Ala Met
465 470 475 480

Glu Gln Glu Arg Arg Gln Leu Leu Glu Lys Asp Pro Arg Arg Asn Ala
485 490 495

Lys Glu Ile Ala Ala Leu Glu Glu Ser Met Asn Ala Arg Ala Gln Glu
500 505 510

Leu Ala Arg Glu Lys Lys Leu Ala Asp Arg Ala Phe Leu Asp Gln Lys
515 520 525

Pro Glu Gly Val Pro Leu Arg Glu Leu Pro Leu Asp Asp Asp Ser Asp
530 535 540

Phe Val Ala Met Glu Gln Glu Arg Arg Gln Leu Leu Glu Lys Asp Pro
545 550 555 560

Arg Arg Asn Ala Lys Glu Ile Ala Ala Leu Glu Glu Ser Met Asn Ala
565 570 575

Arg Ala Gln Glu Leu Ala Arg Glu Lys Lys Leu Ala Asp Arg Ala Phe
580 585 590

Leu Asp Gln Lys Pro Glu Gly Val Pro Leu Arg Glu Leu Pro Leu Asp
595 600 605

Asp Asp Ser Asp Phe Val Ala
610 615

<210> 43
<211> 858
<212> DNA
<213> T CRUZI

<220>
<221> CDS
<222> (1)..(858)

<400> 43
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Asp Pro Thr Tyr Arg Phe Ala Asn His Ala Phe Thr Leu Val Ala Ser
1 5 10 15

gtg acg att cac gag gtt ccg agc gtc gcg agt cct ttg ctg ggt gcg 96
Val Thr Ile His Glu Val Pro Ser Val Ala Ser Pro Leu Leu Gly Ala
20 25 30

agc ctg gac tct tct ggt ggc aaa aaa ctc ctg ggg ctc tcg tac gac 144
Ser Leu Asp Ser Ser Gly Gly Lys Lys Leu Leu Gly Leu Ser Tyr Asp
35 40 45

gag aag cac cag tgg cag cca ata tac gga tca acg ccg gtg acg ccg 192
Glu Lys His Gln Trp Gln Pro Ile Tyr Gly Ser Thr Pro Val Thr Pro
50 55 60

acc gga tcg tgg gag atg ggt aag agg tac cac gtg gtt ctt acg atg 240
Thr Gly Ser Trp Glu Met Gly Lys Arg Tyr His Val Val Leu Thr Met
65 70 75 80

gcg aat aaa att ggc tcc gtg tac att gat gga gaa cct ctg gag ggt 288
Ala Asn Lys Ile Gly Ser Val Tyr Ile Asp Gly Glu Pro Leu Glu Gly
85 90 95

tca ggg cag acc gtt gtg cca gac gag agg acg cct gac atc tcc cac 336
Ser Gly Gln Thr Val Val Pro Asp Glu Arg Thr Pro Asp Ile Ser His
100 105 110

ttc tac gtt ggc ggg tat gga agg agt gat atg cca acc ata agc cac 384
Phe Tyr Val Gly Gly Tyr Gly Arg Ser Asp Met Pro Thr Ile Ser His
115 120 125

gtg acg gtg aat aat gtt ctt ctt tac aac cgt cag ctg aat gcc gag 432
Val Thr Val Asn Asn Val Leu Leu Tyr Asn Arg Gln Leu Asn Ala Glu
130 135 140

gag atc agg acc ttg ttc ttg agc cag gac ctg att ggc acg gaa gca 480
Glu Ile Arg Thr Leu Phe Leu Ser Gln Asp Leu Ile Gly Thr Glu Ala
145 150 155 160

cac atg ggc agc agc agc ggc agc agt gcc cac ggt acg ccc tcg att 528
His Met Gly Ser Ser Ser Gly Ser Ser Ala His Gly Thr Pro Ser Ile
165 170 175

ccc gtt gac agc agt gcc cac ggt aca ccc tcg act ccc gtt gac agc 576
Pro Val Asp Ser Ser Ala His Gly Thr Pro Ser Thr Pro Val Asp Ser
180 185 190

agt gcc cac ggt acg ccc tcg act ccc gtt gac agc agt gcc cac ggt 624
Ser Ala His Gly Thr Pro Ser Thr Pro Val Asp Ser Ser Ala His Gly
195 200 205

aca ccc tcg act ccc gtt gac agc agt gcc cac ggt aca ccc tcg act 672
Thr Pro Ser Thr Pro Val Asp Ser Ser Ala His Gly Thr Pro Ser Thr
210 215 220

ccc gtt gac agc agt gcc cac ggt aag ccc tcg act ccc gct gac agc 720
Pro Val Asp Ser Ser Ala His Gly Lys Pro Ser Thr Pro Ala Asp Ser
225 230 235 240

agt gcc cac agt acg ccc tcg act ccc gct gac agc agt gcc cac agt 768
Ser Ala His Ser Thr Pro Ser Thr Pro Ala Asp Ser Ser Ala His Ser
245 250 255

acg ccc tca att ccc gct gac agc agt gcc cac agt acg ccc tca gct 816
Thr Pro Ser Ile Pro Ala Asp Ser Ser Ala His Ser Thr Pro Ser Ala
260 265 270

ccc gct gac aac ggc gcc aat ggt acg gtt ttg att ttg tcg 858
Pro Ala Asp Asn Gly Ala Asn Gly Thr Val Leu Ile Leu Ser
275 280 285

<210> 44
<211> 286
<212> PRT
<213> T CRUZI

<400> 44

Asp Pro Thr Tyr Arg Phe Ala Asn His Ala Phe Thr Leu Val Ala Ser
1 5 10 15

Val Thr Ile His Glu Val Pro Ser Val Ala Ser Pro Leu Leu Gly Ala
20 25 30

Ser Leu Asp Ser Ser Gly Gly Lys Lys Leu Leu Gly Leu Ser Tyr Asp
35 40 45

Glu Lys His Gln Trp Gln Pro Ile Tyr Gly Ser Thr Pro Val Thr Pro
50 55 60

Thr Gly Ser Trp Glu Met Gly Lys Arg Tyr His Val Val Leu Thr Met
65 70 75 80

Ala Asn Lys Ile Gly Ser Val Tyr Ile Asp Gly Glu Pro Leu Glu Gly
85 90 95

Ser Gly Gln Thr Val Val Pro Asp Glu Arg Thr Pro Asp Ile Ser His
100 105 110

Phe Tyr Val Gly Gly Tyr Gly Arg Ser Asp Met Pro Thr Ile Ser His
115 120 125

Val Thr Val Asn Asn Val Leu Leu Tyr Asn Arg Gln Leu Asn Ala Glu
130 135 140

Glu Ile Arg Thr Leu Phe Leu Ser Gln Asp Leu Ile Gly Thr Glu Ala
145 150 155 160

His Met Gly Ser Ser Ser Gly Ser Ser Ala His Gly Thr Pro Ser Ile
165 170 175

Pro Val Asp Ser Ser Ala His Gly Thr Pro Ser Thr Pro Val Asp Ser
180 185 190

Ser Ala His Gly Thr Pro Ser Thr Pro Val Asp Ser Ser Ala His Gly
195 200 205

Thr Pro Ser Thr Pro Val Asp Ser Ser Ala His Gly Thr Pro Ser Thr
210 215 220

Pro Val Asp Ser Ser Ala His Gly Lys Pro Ser Thr Pro Ala Asp Ser
225 230 235 240

Ser Ala His Ser Thr Pro Ser Thr Pro Ala Asp Ser Ser Ala His Ser
245 250 255

Thr Pro Ser Ile Pro Ala Asp Ser Ser Ala His Ser Thr Pro Ser Ala
260 265 270

Pro Ala Asp Asn Gly Ala Asn Gly Thr Val Leu Ile Leu Ser
275 280 285

<210> 45
<211> 701
<212> DNA
<213> T CRUZI

<220>
<221> CDS
<222> (1)..(699)

<400> 45
act cat gac gcg tac agg ccc gtt gat ccc tcg gcg tac aag cgc gcc 48

Thr His Asp Ala Tyr Arg Pro Val Asp Pro Ser Ala Tyr Lys Arg Ala
1 5 10 15

ttg ccg cag gaa gag caa gag gat gtg ggg ccg cgc cac gtt gat ccc 96
Leu Pro Gln Glu Glu Gln Glu Asp Val Gly Pro Arg His Val Asp Pro
 20 25 30

gac cac ttc cgc tcg acc tcg acg act cat gac gcg tac agg ccc gtt 144
Asp His Phe Arg Ser Thr Ser Thr Thr His Asp Ala Tyr Arg Pro Val
 35 40 45

gat ccc tcg gcg tac aag cgc gcc ttg ccg cag gaa gag caa gag gat 192
Asp Pro Ser Ala Tyr Lys Arg Ala Leu Pro Gln Glu Glu Gln Glu Asp
 50 55 60

gtg ggg ccg cgc cac gtt gat ccc gac cac ttc cgc tcg acg act cat 240
Val Gly Pro Arg His Val Asp Pro Asp His Phe Arg Ser Thr Thr His
65 70 75 80

gac gcg tac agg ccc gtt gat ccc tcg gcg tac aag cgc gcc ttg ccg 288
Asp Ala Tyr Arg Pro Val Asp Pro Ser Ala Tyr Lys Arg Ala Leu Pro
 85 90 95

cag gaa gag caa gag gat gtg ggg ccg cgc cac gtt gat ccc gac cac 336
Gln Glu Glu Gln Glu Asp Val Gly Pro Arg His Val Asp Pro Asp His
 100 105 110

ttc cgc tcg acc tcg acg act cat gac gcg tac agg ccc gtt gat ccc 384
Phe Arg Ser Thr Ser Thr Thr His Asp Ala Tyr Arg Pro Val Asp Pro
 115 120 125

tcg gcg tac aag cgc gcc ttg ccg cag gaa gag caa gag gat gtg ggg 432
Ser Ala Tyr Lys Arg Ala Leu Pro Gln Glu Glu Gln Glu Asp Val Gly
 130 135 140

ccg cgc cac gtt gat ccc gac cac ttc cgc tcg acc tcg acg act cat 480
Pro Arg His Val Asp Pro Asp His Phe Arg Ser Thr Ser Thr Thr His
145 150 155 160

gac gcg tac agg ccc gtt gat ccc tcg gcg tac aag cgc gcc ttg ccg 528
Asp Ala Tyr Arg Pro Val Asp Pro Ser Ala Tyr Lys Arg Ala Leu Pro
 165 170 175

cag gaa gag caa gag gat gtg ggg ccg cgc cac gtt gat ccc gac cac 576
Gln Glu Glu Gln Glu Asp Val Gly Pro Arg His Val Asp Pro Asp His
180 185 190

ttc cgc tcg acg act cat gac gcg tac agg ccc gtt gat ccc tcg gcg 624
Phe Arg Ser Thr Thr His Asp Ala Tyr Arg Pro Val Asp Pro Ser Ala
195 200 205

tac aag cgc gcc ttg ccg cag gaa gag caa gag gat gtg ggg ccg cgc 672
Tyr Lys Arg Ala Leu Pro Gln Glu Glu Gln Glu Asp Val Gly Pro Arg
210 215 220

cac gtt gat ccc gac cac ttc cgc tcg ac 701
His Val Asp Pro Asp His Phe Arg Ser
225 230

<210> 46
<211> 233
<212> PRT
<213> T CRUZI

<400> 46

Thr His Asp Ala Tyr Arg Pro Val Asp Pro Ser Ala Tyr Lys Arg Ala
1 5 10 15

Leu Pro Gln Glu Glu Gln Glu Asp Val Gly Pro Arg His Val Asp Pro
20 25 30

Asp His Phe Arg Ser Thr Ser Thr Thr His Asp Ala Tyr Arg Pro Val
35 40 45

Asp Pro Ser Ala Tyr Lys Arg Ala Leu Pro Gln Glu Glu Gln Glu Asp
50 55 60

Val Gly Pro Arg His Val Asp Pro Asp His Phe Arg Ser Thr Thr His
65 70 75 80

Asp Ala Tyr Arg Pro Val Asp Pro Ser Ala Tyr Lys Arg Ala Leu Pro
85 90 95

Gln Glu Glu Gln Glu Asp Val Gly Pro Arg His Val Asp Pro Asp His
100 105 110

Phe Arg Ser Thr Ser Thr Thr His Asp Ala Tyr Arg Pro Val Asp Pro
115 120 125

Ser Ala Tyr Lys Arg Ala Leu Pro Gln Glu Glu Gln Glu Asp Val Gly
130 135 140

Pro Arg His Val Asp Pro Asp His Phe Arg Ser Thr Ser Thr Thr His
145 150 155 160

Asp Ala Tyr Arg Pro Val Asp Pro Ser Ala Tyr Lys Arg Ala Leu Pro
165 170 175

Gln Glu Glu Gln Glu Asp Val Gly Pro Arg His Val Asp Pro Asp His
180 185 190

Phe Arg Ser Thr Thr His Asp Ala Tyr Arg Pro Val Asp Pro Ser Ala
195 200 205

Tyr Lys Arg Ala Leu Pro Gln Glu Glu Gln Glu Asp Val Gly Pro Arg
210 215 220

His Val Asp Pro Asp His Phe Arg Ser
225 230

<210> 47
<211> 1557
<212> DNA
<213> T CRUZI

<220>
<221> CDS
<222> (1)..(1557)

<400> 47

gat cca acg tat cgt ttt gca aac cac gcg ttc acg ctg gtg gcg tcg 48
Asp Pro Thr Tyr Arg Phe Ala Asn His Ala Phe Thr Leu Val Ala Ser
1 5 10 15

gtg acg att cac gag gtt ccg agc gtc gcg agt cct ttg ctg ggt gcg 96
Val Thr Ile His Glu Val Pro Ser Val Ala Ser Pro Leu Leu Gly Ala
20 25 30

agc ctg gac tct tct ggt ggc aaa aaa ctc ctg ggg ctc tcg tac gac 144
Ser Leu Asp Ser Ser Gly Gly Lys Lys Leu Leu Gly Leu Ser Tyr Asp
35 40 45

gag aag cac cag tgg cag cca ata tac gga tca acg ccg gtg acg ccg 192
Glu Lys His Gln Trp Gln Pro Ile Tyr Gly Ser Thr Pro Val Thr Pro
50 55 60

acc gga tcg tgg gag atg ggt aag agg tac cac gtg gtt ctt acg atg 240
Thr Gly Ser Trp Glu Met Gly Lys Arg Tyr His Val Val Leu Thr Met
65 70 75 80

gcg aat aaa att ggc tcc gtg tac att gat gga gaa cct ctg gag ggt 288
Ala Asn Lys Ile Gly Ser Val Tyr Ile Asp Gly Glu Pro Leu Glu Gly
85 90 95

tca ggg cag acc gtt gtg cca gac gag agg acg cct gac atc tcc cac 336
Ser Gly Gln Thr Val Val Pro Asp Glu Arg Thr Pro Asp Ile Ser His
100 105 110

ttc tac gtt ggc ggg tat gga agg agt gat atg cca acc ata agc cac 384
Phe Tyr Val Gly Gly Tyr Gly Arg Ser Asp Met Pro Thr Ile Ser His
115 120 125

gtg acg gtg aat aat gtt ctt ctt tac aac cgt cag ctg aat gcc gag 432
Val Thr Val Asn Asn Val Leu Leu Tyr Asn Arg Gln Leu Asn Ala Glu
130 135 140

gag atc agg acc ttg ttc ttg agc cag gac ctg att ggc acg gaa gca 480
Glu Ile Arg Thr Leu Phe Leu Ser Gln Asp Leu Ile Gly Thr Glu Ala
145 150 155 160

cac atg ggc agc agc agc ggc agc agt gcc cac ggt acg ccc tcg att 528
His Met Gly Ser Ser Ser Gly Ser Ser Ala His Gly Thr Pro Ser Ile
165 170 175

ccc gtt gac agc agt gcc cac ggt aca ccc tcg act ccc gtt gac agc 576
Pro Val Asp Ser Ser Ala His Gly Thr Pro Ser Thr Pro Val Asp Ser
180 185 190

agt gcc cac ggt acg ccc tcg act ccc gtt gac agc agt gcc cac ggt 624
Ser Ala His Gly Thr Pro Ser Thr Pro Val Asp Ser Ser Ala His Gly
195 200 205

aca ccc tcg act ccc gtt gac agc agt gcc cac ggt aca ccc tcg act 672
Thr Pro Ser Thr Pro Val Asp Ser Ser Ala His Gly Thr Pro Ser Thr
210 215 220

ccc gtt gac agc agt gcc cac ggt aag ccc tcg act ccc gct gac agc 720
Pro Val Asp Ser Ser Ala His Gly Lys Pro Ser Thr Pro Ala Asp Ser
225 230 235 240

agt gcc cac agt acg ccc tcg act ccc gct gac agc agt gcc cac agt 768
Ser Ala His Ser Thr Pro Ser Thr Pro Ala Asp Ser Ser Ala His Ser
245 250 255

acg ccc tca att ccc gct gac agc agt gcc cac agt acg ccc tca gct 816
Thr Pro Ser Ile Pro Ala Asp Ser Ser Ala His Ser Thr Pro Ser Ala
260 265 270

ccc gct gac aac ggc gcc aat ggt acg gtt ttg att ttg tcg act cat 864
Pro Ala Asp Asn Gly Ala Asn Gly Thr Val Leu Ile Leu Ser Thr His
275 280 285

gac gcg tac agg ccc gtt gat ccc tcg gcg tac aag cgc gcc ttg ccg 912
Asp Ala Tyr Arg Pro Val Asp Pro Ser Ala Tyr Lys Arg Ala Leu Pro
290 295 300

cag gaa gag caa gag gat gtg ggg ccg cgc cac gtt gat ccc gac cac 960
Gln Glu Glu Gln Glu Asp Val Gly Pro Arg His Val Asp Pro Asp His
305 310 315 320

ttc cgc tcg acc tcg acg act cat gac gcg tac agg ccc gtt gat ccc 1008
Phe Arg Ser Thr Ser Thr Thr His Asp Ala Tyr Arg Pro Val Asp Pro
325 330 335

tcg gcg tac aag cgc gcc ttg ccg cag gaa gag caa gag gat gtg ggg 1056
Ser Ala Tyr Lys Arg Ala Leu Pro Gln Glu Glu Gln Glu Asp Val Gly
340 345 350

ccg cgc cac gtt gat ccc gac cac ttc cgc tcg acg act cat gac gcg 1104
Pro Arg His Val Asp Pro Asp His Phe Arg Ser Thr Thr His Asp Ala
355 360 365

tac agg ccc gtt gat ccc tcg gcg tac aag cgc gcc ttg ccg cag gaa 1152
Tyr Arg Pro Val Asp Pro Ser Ala Tyr Lys Arg Ala Leu Pro Gln Glu
370 375 380

gag caa gag gat gtg ggg ccg cgc cac gtt gat ccc gac cac ttc cgc 1200
Glu Gln Glu Asp Val Gly Pro Arg His Val Asp Pro Asp His Phe Arg
385 390 395 400

tcg acc tcg acg act cat gac gcg tac agg ccc gtt gat ccc tcg gcg 1248
Ser Thr Ser Thr Thr His Asp Ala Tyr Arg Pro Val Asp Pro Ser Ala
405 410 415

tac aag cgc gcc ttg ccg cag gaa gag caa gag gat gtg ggg ccg cgc 1296
Tyr Lys Arg Ala Leu Pro Gln Glu Glu Gln Glu Asp Val Gly Pro Arg
420 425 430

cac gtt gat ccc gac cac ttc cgc tcg acc tcg acg act cat gac gcg 1344
His Val Asp Pro Asp His Phe Arg Ser Thr Ser Thr Thr His Asp Ala
435 440 445

tac agg ccc gtt gat ccc tcg gcg tac aag cgc gcc ttg ccg cag gaa 1392
Tyr Arg Pro Val Asp Pro Ser Ala Tyr Lys Arg Ala Leu Pro Gln Glu
450 455 460

gag caa gag gat gtg ggg ccg cgc cac gtt gat ccc gac cac ttc cgc 1440
Glu Gln Glu Asp Val Gly Pro Arg His Val Asp Pro Asp His Phe Arg
465 470 475 480

tcg acg act cat gac gcg tac agg ccc gtt gat ccc tcg gcg tac aag 1488
 Ser Thr Thr His Asp Ala Tyr Arg Pro Val Asp Pro Ser Ala Tyr Lys
 485 490 495

cgc gcc ttg ccg cag gaa gag caa gag gat gtg ggg ccg cgc cac gtt 1536
 Arg Ala Leu Pro Gln Glu Glu Gln Glu Asp Val Gly Pro Arg His Val
 500 505 510

gat ccc gac cac ttc cgc tcg 1557
 Asp Pro Asp His Phe Arg Ser
 515

<210> 48
 <211> 519
 <212> PRT
 <213> T CRUZI

<400> 48

Asp Pro Thr Tyr Arg Phe Ala Asn His Ala Phe Thr Leu Val Ala Ser
 1 5 10 15

Val Thr Ile His Glu Val Pro Ser Val Ala Ser Pro Leu Leu Gly Ala
 20 25 30

Ser Leu Asp Ser Ser Gly Gly Lys Lys Leu Leu Gly Leu Ser Tyr Asp
 35 40 45

Glu Lys His Gln Trp Gln Pro Ile Tyr Gly Ser Thr Pro Val Thr Pro
 50 55 60

Thr Gly Ser Trp Glu Met Gly Lys Arg Tyr His Val Val Leu Thr Met
 65 70 75 80

Ala Asn Lys Ile Gly Ser Val Tyr Ile Asp Gly Glu Pro Leu Glu Gly
 85 90 95

Ser Gly Gln Thr Val Val Pro Asp Glu Arg Thr Pro Asp Ile Ser His
100 105 110

Phe Tyr Val Gly Gly Tyr Gly Arg Ser Asp Met Pro Thr Ile Ser His
115 120 125

Val Thr Val Asn Asn Val Leu Leu Tyr Asn Arg Gln Leu Asn Ala Glu
130 135 140

Glu Ile Arg Thr Leu Phe Leu Ser Gln Asp Leu Ile Gly Thr Glu Ala
145 150 155 160

His Met Gly Ser Ser Ser Gly Ser Ser Ala His Gly Thr Pro Ser Ile
165 170 175

Pro Val Asp Ser Ser Ala His Gly Thr Pro Ser Thr Pro Val Asp Ser
180 185 190

Ser Ala His Gly Thr Pro Ser Thr Pro Val Asp Ser Ser Ala His Gly
195 200 205

Thr Pro Ser Thr Pro Val Asp Ser Ser Ala His Gly Thr Pro Ser Thr
210 215 220

Pro Val Asp Ser Ser Ala His Gly Lys Pro Ser Thr Pro Ala Asp Ser
225 230 235 240

Ser Ala His Ser Thr Pro Ser Thr Pro Ala Asp Ser Ser Ala His Ser
245 250 255

Thr Pro Ser Ile Pro Ala Asp Ser Ser Ala His Ser Thr Pro Ser Ala
260 265 270

Pro Ala Asp Asn Gly Ala Asn Gly Thr Val Leu Ile Leu Ser Thr His
275 280 285

Asp Ala Tyr Arg Pro Val Asp Pro Ser Ala Tyr Lys Arg Ala Leu Pro
290 295 300

Gln Glu Glu Gln Glu Asp Val Gly Pro Arg His Val Asp Pro Asp His
305 310 315 320

Phe Arg Ser Thr Ser Thr Thr His Asp Ala Tyr Arg Pro Val Asp Pro
325 330 335

Ser Ala Tyr Lys Arg Ala Leu Pro Gln Glu Glu Gln Glu Asp Val Gly
340 345 350

Pro Arg His Val Asp Pro Asp His Phe Arg Ser Thr Thr His Asp Ala
355 360 365

Tyr Arg Pro Val Asp Pro Ser Ala Tyr Lys Arg Ala Leu Pro Gln Glu
370 375 380

Glu Gln Glu Asp Val Gly Pro Arg His Val Asp Pro Asp His Phe Arg
385 390 395 400

Ser Thr Ser Thr Thr His Asp Ala Tyr Arg Pro Val Asp Pro Ser Ala
405 410 415

Tyr Lys Arg Ala Leu Pro Gln Glu Glu Gln Glu Asp Val Gly Pro Arg
420 425 430

His Val Asp Pro Asp His Phe Arg Ser Thr Ser Thr Thr His Asp Ala
435 440 445

Tyr Arg Pro Val Asp Pro Ser Ala Tyr Lys Arg Ala Leu Pro Gln Glu
450 455 460

Glu Gln Glu Asp Val Gly Pro Arg His Val Asp Pro Asp His Phe Arg
465 470 475 480

Ser Thr Thr His Asp Ala Tyr Arg Pro Val Asp Pro Ser Ala Tyr Lys
485 490 495

Arg Ala Leu Pro Gln Glu Glu Gln Glu Asp Val Gly Pro Arg His Val
500 505 510

Asp Pro Asp His Phe Arg Ser
515

<210> 49
<211> 1521
<212> DNA
<213> T CRUZI

<220>
<221> CDS
<222> (1)..(1521)

<400> 49
atg gcc cga gct gtg gtg ctt gag gat gga gcg ctt tac gtg gcg gac 48
Met Ala Arg Ala Val Val Leu Glu Asp Gly Ala Leu Tyr Val Ala Asp
1 5 10 15

aat gcc aac aac ctc gtt cga gaa atc tcc aat ggc gtt gtc act tcg 96
Asn Ala Asn Asn Leu Val Arg Glu Ile Ser Asn Gly Val Val Thr Ser
20 25 30

ttt att acg gaa gga ctg ctg ggc cca tcg tac atc aaa ccg tac agc 144
Phe Ile Thr Glu Gly Leu Leu Gly Pro Ser Tyr Ile Lys Pro Tyr Ser
35 40 45

cgt aca aat ggc gct cat gac ttg ttt gtg tgg gac acg ggc aaa tca 192
Arg Thr Asn Gly Ala His Asp Leu Phe Val Ser Asp Thr Gly Lys Ser
50 55 60

cgc atc att ttt gcc cca cct cag aaa aaa acg ttc atc aca gtg ttt 240
Arg Ile Ile Phe Ala Pro Pro Gln Lys Lys Thr Phe Ile Thr Val Phe
65 70 75 80

ata aca gga ttc cag ccg gat gtt ctt caa att agc gag aag agt cgt 288
Ile Thr Gly Phe Gln Pro Asp Val Leu Gln Ile Ser Glu Lys Ser Arg
85 90 95

ttg atg ttt gcc atc tgc aat tcc acg aaa att ctt gcg att aat atg 336
Leu Met Phe Ala Ile Cys Asn Ser Thr Lys Ile Leu Ala Ile Asn Met
100 105 110

cag gga gcc aca acc ccg aag gag tac tgg caa gtt gga aat gcg gac 384
Gln Gly Ala Thr Thr Pro Lys Glu Tyr Trp Gln Val Gly Asn Ala Asp
115 120 125

tgc atg ggc tat cag agt tcc ctc atg ctc acg acc gag gag gat aaa 432
Cys Met Gly Tyr Gln Ser Ser Leu Met Leu Thr Thr Glu Glu Asp Lys
130 135 140

ctc ctc tac tac ggc ata tta aat gga acc cca tcc atc atg tct tta 480
Leu Leu Tyr Tyr Gly Ile Leu Asn Gly Thr Pro Ser Ile Met Ser Leu
145 150 155 160

ccc gcc acc aaa acg aag acg gaa gca ccc aga att tgc ccg gat gtg 528
Pro Ala Thr Lys Lys Thr Glu Ala Pro Arg Ile Cys Pro Asp Val
165 170 175

ttg ttg cag tgg cca cat ggg ccc att gtt tgg ctt gtg aat att aac 576
Leu Leu Gln Trp Pro His Gly Pro Ile Val Ser Leu Val Asn Ile Asn
180 185 190

aaa cat gca ttt tac gtt gtt acc gcc tcc aat gta tac att gta cat 624
Lys His Ala Phe Tyr Val Val Thr Ala Ser Asn Val Tyr Ile Val His
195 200 205

gat ggc tgg tat cat ccg act gga tcc atg gcc cag ctc caa cag gca 672
Asp Gly Ser Tyr His Pro Thr Gly Ser Met Ala Gln Leu Gln Gln Ala
210 215 220

gaa aat aat atc act aat tcc aaa aaa gaa atg aca aag cta cga gaa 720
Glu Asn Asn Ile Thr Asn Ser Lys Lys Glu Met Thr Lys Leu Arg Glu
225 230 235 240

aaa gtg aaa aag gcc gag aaa gaa aaa ttg gac gcc att aac cgg gca 768
Lys Val Lys Lys Ala Glu Lys Glu Lys Leu Asp Ala Ile Asn Arg Ala
245 250 255

acc aag ctg gaa gag gaa cga aac caa gcg tac aaa gca gca cac aag 816
Thr Lys Leu Glu Glu Arg Asn Gln Ala Tyr Lys Ala Ala His Lys
260 265 270

gca gag gag gaa aag gct aaa aca ttt caa cgc ctt ata aca ttt gag 864
Ala Glu Glu Glu Lys Ala Lys Thr Phe Gln Arg Leu Ile Thr Phe Glu
275 280 285

tcg gaa aat att aac tta aag aaa agg cca aat gac gca gtt tca aat 912
Ser Glu Asn Ile Asn Leu Lys Lys Arg Pro Asn Asp Ala Val Ser Asn
290 295 300

cgg gat aag aaa aaa aat tct gaa acc gca aaa act gac gaa gta gag 960
Arg Asp Lys Lys Lys Asn Ser Glu Thr Ala Lys Thr Asp Glu Val Glu
305 310 315 320

aaa cag agg gcg gct gag gct gcc aag gcc gtg gag acg gag aag cag 1008
Lys Gln Arg Ala Ala Glu Ala Ala Lys Ala Val Glu Thr Glu Lys Gln
325 330 335

agg gca gct gag gcc acg aag gtt gcc gaa gcg gag aag cgg aag gca 1056
Arg Ala Ala Glu Ala Thr Lys Val Ala Glu Ala Glu Lys Arg Lys Ala
340 345 350

gct gag gcc gcc aag gcc gtg gag acg gag aag cag agg gca gct gaa 1104
Ala Glu Ala Ala Lys Ala Val Glu Thr Glu Lys Gln Arg Ala Ala Glu
355 360 365

gcc acg aag gtt gcc gaa gcg gag aag cag aag gca gct gag gcc gcc 1152
Ala Thr Lys Val Ala Glu Ala Glu Lys Gln Lys Ala Ala Glu Ala Ala
370 375 380

aag gcc gtg gag acg gag aag cag agg gca gct gaa gcc acg aag gtt 1200
Lys Ala Val Glu Thr Glu Lys Gln Arg Ala Ala Glu Ala Thr Lys Val
385 390 395 400

gcc gaa gcg gag aag cag agg gca gct gaa gcc atg aag gtt gcc gaa 1248
 Ala Glu Ala Glu Lys Gln Arg Ala Ala Glu Ala Met Lys Val Ala Glu
 405 410 415

gcg gag aag cag aag gca gct gag gcc gcc aag gcc gtg gag acg gag 1296
 Ala Glu Lys Gln Lys Ala Ala Glu Ala Ala Lys Ala Val Glu Thr Glu
 420 425 430

aag cag agg gca gct gaa gcc acg aag gtt gcc gaa gcg gag aag cag 1344
 Lys Gln Arg Ala Ala Glu Ala Thr Lys Val Ala Glu Ala Glu Lys Gln
 435 440 445

aag gca gct gag gcc gcc aag gcc gtg gag acg gag aag cag agg gca 1392
 Lys Ala Ala Glu Ala Ala Lys Ala Val Glu Thr Glu Lys Gln Arg Ala
 450 455 460

gct gaa gcc acg aag gtt gcc gaa gcg gag aag cag aag gca gct gag 1440
 Ala Glu Ala Thr Lys Val Ala Glu Ala Glu Lys Gln Lys Ala Ala Glu
 465 470 475 480

gcc gcc aag gcc gtg gag acg gag aag cag agg gca gct gaa gcc acg 1488
 Ala Ala Lys Ala Val Glu Thr Glu Lys Gln Arg Ala Ala Glu Ala Thr
 485 490 495

aag gtt gcc gaa gcg gag aag gat atc gat ccc 1521
 Lys Val Ala Glu Ala Glu Lys Asp Ile Asp Pro
 500 505

<210> 50
 <211> 507
 <212> PRT
 <213> T CRUZI

<400> 50

Met Ala Arg Ala Val Val Leu Glu Asp Gly Ala Leu Tyr Val Ala Asp
 1 5 10 15

Asn Ala Asn Asn Leu Val Arg Glu Ile Ser Asn Gly Val Val Thr Ser
 20 25 30

Phe Ile Thr Glu Gly Leu Leu Gly Pro Ser Tyr Ile Lys Pro Tyr Ser
35 40 45

Arg Thr Asn Gly Ala His Asp Leu Phe Val Ser Asp Thr Gly Lys Ser
50 55 60

Arg Ile Ile Phe Ala Pro Pro Gln Lys Lys Thr Phe Ile Thr Val Phe
65 70 75 80

Ile Thr Gly Phe Gln Pro Asp Val Leu Gln Ile Ser Glu Lys Ser Arg
85 90 95

Leu Met Phe Ala Ile Cys Asn Ser Thr Lys Ile Leu Ala Ile Asn Met
100 105 110

Gln Gly Ala Thr Thr Pro Lys Glu Tyr Trp Gln Val Gly Asn Ala Asp
115 120 125

Cys Met Gly Tyr Gln Ser Ser Leu Met Leu Thr Thr Glu Glu Asp Lys
130 135 140

Leu Leu Tyr Tyr Gly Ile Leu Asn Gly Thr Pro Ser Ile Met Ser Leu
145 150 155 160

Pro Ala Thr Lys Thr Lys Thr Glu Ala Pro Arg Ile Cys Pro Asp Val
165 170 175

Leu Leu Gln Trp Pro His Gly Pro Ile Val Ser Leu Val Asn Ile Asn
180 185 190

Lys His Ala Phe Tyr Val Val Thr Ala Ser Asn Val Tyr Ile Val His
195 200 205

Asp Gly Ser Tyr His Pro Thr Gly Ser Met Ala Gln Leu Gln Gln Ala
210 215 220

Glu Asn Asn Ile Thr Asn Ser Lys Lys Glu Met Thr Lys Leu Arg Glu
225 230 235 240

Lys Val Lys Lys Ala Glu Lys Glu Lys Leu Asp Ala Ile Asn Arg Ala
245 250 255

Thr Lys Leu Glu Glu Glu Arg Asn Gln Ala Tyr Lys Ala Ala His Lys
260 265 270

Ala Glu Glu Glu Lys Ala Lys Thr Phe Gln Arg Leu Ile Thr Phe Glu
275 280 285

Ser Glu Asn Ile Asn Leu Lys Lys Arg Pro Asn Asp Ala Val Ser Asn
290 295 300

Arg Asp Lys Lys Lys Asn Ser Glu Thr Ala Lys Thr Asp Glu Val Glu
305 310 315 320

Lys Gln Arg Ala Ala Glu Ala Ala Lys Ala Val Glu Thr Glu Lys Gln
325 330 335

Arg Ala Ala Glu Ala Thr Lys Val Ala Glu Ala Glu Lys Arg Lys Ala
340 345 350

Ala Glu Ala Ala Lys Ala Val Glu Thr Glu Lys Gln Arg Ala Ala Glu
355 360 365

Ala Thr Lys Val Ala Glu Ala Glu Lys Gln Lys Ala Ala Glu Ala Ala
370 375 380

Lys Ala Val Glu Thr Glu Lys Gln Arg Ala Ala Glu Ala Thr Lys Val
385 390 395 400

Ala Glu Ala Glu Lys Gln Arg Ala Ala Glu Ala Met Lys Val Ala Glu
405 410 415

Ala Glu Lys Gln Lys Ala Ala Glu Ala Ala Lys Ala Val Glu Thr Glu
420 425 430

Lys Gln Arg Ala Ala Glu Ala Thr Lys Val Ala Glu Ala Glu Lys Gln
435 440 445

Lys Ala Ala Glu Ala Ala Lys Ala Val Glu Thr Glu Lys Gln Arg Ala
450 455 460

Ala Glu Ala Thr Lys Val Ala Glu Ala Glu Lys Gln Lys Ala Ala Glu
465 470 475 480

Ala Ala Lys Ala Val Glu Thr Glu Lys Gln Arg Ala Ala Glu Ala Thr
485 490 495

Lys Val Ala Glu Ala Glu Lys Asp Ile Asp Pro
500 505

<210> 1

<211> 34

<212> PRT

<213> T. CRUZI

<400> Sequence: 51

Ser Thr Asp Lys Leu Lys Leu Asn Gln Gln Asn Lys Pro His Ile Ala
1 5 10 15

Asn Asn Lys Gln Lys Thr Thr Leu Glu Lys Thr Gln Thr Glu Gln Lys
20 25 30

Thr Ala

<210> 2
<211> 12
<212> PRT
<213> T. CRUZI

<400> Sequence: 52

Pro Phe Gly Gln Ala Ala Ala Gly Asp Lys Pro Ser
1 5 10

<210> 3
<211> 21
<212> PRT
<213> T. CRUZI

<400> Sequence: 53

Gly Thr Ala Phe Asp Ala Ser Arg Ser Thr Val Phe Ala Asn Ala Pro
1 5 10 15

Gly Val Ala Gln Val
20

<210> 4
<211> 68
<212> PRT
<213> T. CRUZI

<400> Sequence: 54

Met Glu Gln Glu Arg Arg Gln Leu Leu Glu Lys Asp Pro Arg Arg Asn
1 5 10 15

Ala Lys Glu Ile Ala Ala Leu Glu Glu Ser Met Asn Ala Arg Ala Gln
20 25 30

Glu Leu Ala Arg Glu Lys Lys Leu Ala Asp Arg Ala Phe Leu Asp Gln
35 40 45

Lys Pro Glu Gly Val Pro Leu Arg Glu Leu Pro Leu Asp Asp Asp Ser
50 55 60

Asp Phe Val Ala
65

<210> 5
<211> 85
<212> PRT
<213> T. CRUZI

<400> Sequence: 55

Met Ala Gln Leu Gln Gln Ala Glu Asn Asn Ile Thr Asn Ser Lys Lys
1 5 10 15

Glu Met Thr Lys Leu Arg Glu Lys Val Lys Lys Ala Glu Lys Glu Lys
20 25 30

Leu Asp Ala Ile Asn Arg Ala Thr Lys Leu Glu Glu Glu Arg Asn Gln
35 40 45

Ala Tyr Lys Ala Ala His Lys Ala Glu Glu Glu Lys Ala Lys Thr Phe
50 55 60

Gln Arg Leu Ile Thr Phe Glu Ser Glu Asn Ile Asn Leu Lys Lys Arg
65 70 75 80

Pro Asn Asp Ala Val
85

<210> 6
<211> 14
<212> PRT
<213> T. CRUZI

<400> Sequence: 56

Gln Arg Ala Ala Glu Ala Ala Lys Ala Val Glu Thr Glu Lys
1 5 10

<210> 7
<211> 214
<212> PRT
<213> T. CRUZI

<400> Sequence: 57

Asp Ile Asp Pro Met Gly Ala Cys Gly Ser Lys Asp Ser Thr Ser Asp
1 5 10 15

Lys Gly Leu Ala Ser Asp Lys Asp Gly Lys Asn Ala Lys Asp Arg Lys
20 25 30

Glu Ala Trp Glu Arg Ile Arg Gln Ala Ile Pro Arg Glu Lys Thr Ala
35 40 45

Glu Ala Lys Gln Arg Arg Ile Glu Leu Phe Lys Lys Phe Asp Lys Asn
50 55 60

Glu Thr Gly Lys Leu Cys Tyr Asp Glu Val His Ser Gly Cys Leu Glu
65 70 75 80

Val Leu Lys Leu Asp Glu Phe Thr Pro Arg Val Arg Asp Ile Thr Lys
85 90 95

Arg Ala Phe Asp Lys Ala Arg Ala Leu Gly Ser Lys Leu Glu Asn Lys
100 105 110

Gly Ser Glu Asp Phe Val Glu Phe Leu Glu Phe Arg Leu Met Leu Cys
115 120 125

Tyr Ile Tyr Asp Phe Phe Glu Leu Thr Val Met Phe Asp Glu Ile Asp
130 135 140

Ala Ser Gly Asn Met Leu Val Asp Glu Glu Glu Phe Lys Arg Ala Val
145 150 155 160

Pro Lys Leu Glu Ala Trp Gly Ala Lys Val Glu Asp Pro Ala Ala Leu
165 170 175

Phe Lys Glu Leu Asp Lys Asn Gly Thr Gly Ser Val Thr Phe Asp Glu
180 185 190

Phe Ala Ala Trp Ala Ser Ala Val Lys Leu Asp Ala Asp Gly Asp Pro
195 200 205

Asp Asn Val Pro Asp Ile
210